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SEWAGE EFFLUENT SPRAY INCREASES DIAMETER GROWTH OF JACK PINE

David N. Tolsted
Associate Forest Research Technician
Institute of Forest Genetics
Rhinelander, Wisconsin

ABSTRACT.--Sewage effluent applied to jack pine in southwestern Wisconsin significantly increased diameter growth during the second year.

OXFORD: 237.41:561.21:U628.38:174.7 *Pinus banksiana*. KEY WORDS: irrigated, sprinklers, dominant, increase, growth.

Sewage effluent was applied to forest land to determine how such irrigation might affect the growth of jack pine (*Pinus banksiana*, Lamb.). This note reports the results.

METHODS

The study site was located at the Fort (formerly Camp) McCoy military reservation in southwestern Wisconsin. The trees treated were part of a 45-year-old jack pine forest of medium stocking growing on the fast-draining Sparta sand. Until the early 1930's this land had been farmed.

Two plots of about 0.44 acres were established. One was irrigated and the other was not. The irrigated plot was divided in half, one half receiving 2 inches of effluent per week and one half receiving 4 inches per week. Effluent was applied throughout the year (intermittent during winter months) with 36 impact sprinklers situated to give equal distribution over the plots.

Only dominant and codominant trees were measured--14 on the 2-inch plot, 15 on the 4-inch plot, and 27 on the nonirrigated control plot. The trees were measured at the beginning and end of the 1974 growing season and at the end of the 1975 growing season. The data were tested for statistical significance by analysis of variance.

Average diameters, taken at the beginning of the study, were 9.6 inches for the control plot, 9.2 inches for the 2-inch application plot, and 8.7 inches for the 4-inch application plot.

Growing season rainfall was about the same for the 2 years (19.13 inches in 1974 and 20.06 inches in 1975). Normal rainfall for this period is 20.35 inches.

RESULTS

Diameter growth was not significantly affected by either application of effluent the first year. However, in the second year (1975) diameter growth was significantly greater (1 percent level) on both irrigated plots than on the control plot (fig. 1). Tree diameter did not influence growth response. The marked increase in growth the second year of irrigation suggests that waste water disposal on jack pine areas may produce a worthwhile benefit in increased wood production.

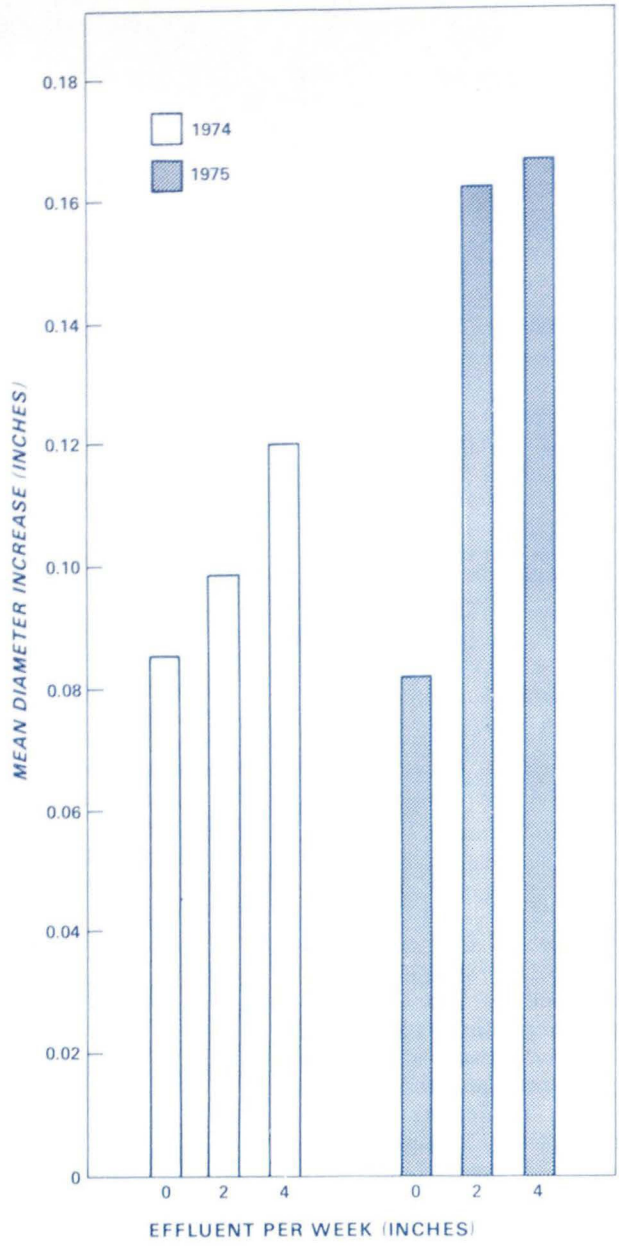

Figure 1.--*Effect of effluent on tree growth.*

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